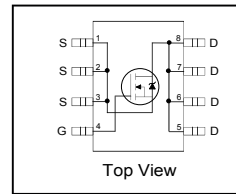


Features

- Advanced Planar Technology
- Low On-Resistance
- Logic Level
- N Channel MOSFET
- Surface Mount
- Available in Tape & Reel
- 150°C Operating Temperature
- Lead-Free, RoHS Compliant
- Automotive Qualified *



V_{DSS}		30V
$R_{DS(on)}$ typ.		9.2mΩ
	max.	11mΩ
I_D		13A



G	D	S
Gate	Drain	Source

Description

Specifically designed for Automotive applications, these HEXFET® Power MOSFET's in a Dual SO-8 package utilize the latest processing techniques to achieve extremely low on-resistance per silicon area. Additional features of these Automotive qualified HEXFET Power MOSFET's are a 150°C junction operating temperature, fast switching speed and improved repetitive avalanche rating. These benefits combine to make this design an extremely efficient and reliable device for use in Automotive applications and a wide variety of other applications.

The efficient SO-8 package provides enhanced thermal characteristics and dual MOSFET die capability making it ideal in a variety of power applications. This dual, surface mount SO-8 can dramatically reduce board space and is also available in Tape & Reel.

Base part number	Package Type	Standard Pack		Orderable Part Number
		Form	Quantity	
AUIRF7805Q	SO-8	Tape and Reel	4000	AUIRF7805QTR

Absolute Maximum Ratings

Stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only; and functional operation of the device at these or any other condition beyond those indicated in the specifications is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability. The thermal resistance and power dissipation ratings are measured under board mounted and still air conditions. Ambient temperature (TA) is 25°C, unless otherwise specified.

Symbol	Parameter	Max.	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-to-Source Voltage	± 12	
$I_D @ T_A = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	13	A
$I_D @ T_A = 70^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	10	
I_{DM}	Pulsed Drain Current ①	100	
$P_D @ T_A = 25^\circ C$	Maximum Power Dissipation ③	2.5	W
$P_D @ T_A = 70^\circ C$	Maximum Power Dissipation ③	1.6	
	Linear Derating Factor	0.02	W/°C
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to + 150	°C

Thermal Resistance

Symbol	Parameter	Typ.	Max.	Units
$R_{\theta JL}$	Junction-to-Drain Lead ⑤	—	20	°C/W
$R_{\theta JA}$	Junction-to-Ambient ③	—	50	

HEXFET® is a registered trademark of Infineon.

*Qualification standards can be found at www.infineon.com

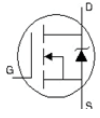
Static @ T_J = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
V _{(BR)DSS}	Drain-to-Source Breakdown Voltage	30	—	—	V	V _{GS} = 0V, I _D = 250μA
R _{DS(on)}	Static Drain-to-Source On-Resistance	—	9.2	11	mΩ	V _{GS} = 4.5V, I _D = 7.0A ②
V _{GS(th)}	Gate Threshold Voltage ⑥	1.0	—	3.0	V	V _{DS} = V _{GS} , I _D = 250μA
I _{DSS}	Drain-to-Source Leakage Current	—	—	70	μA	V _{DS} = 30V, V _{GS} = 0V
		—	—	10		V _{DS} = 24V, V _{GS} = 0V
		—	—	150		V _{DS} = 24V, V _{GS} = 0V, T _J = 100°C
I _{GSS}	Gate-to-Source Forward Leakage	—	—	100	nA	V _{GS} = 12V
	Gate-to-Source Reverse Leakage	—	—	-100		V _{GS} = -12V

Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise specified)

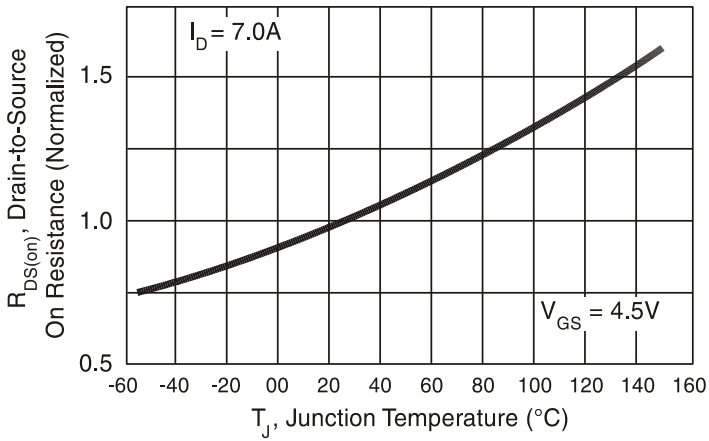
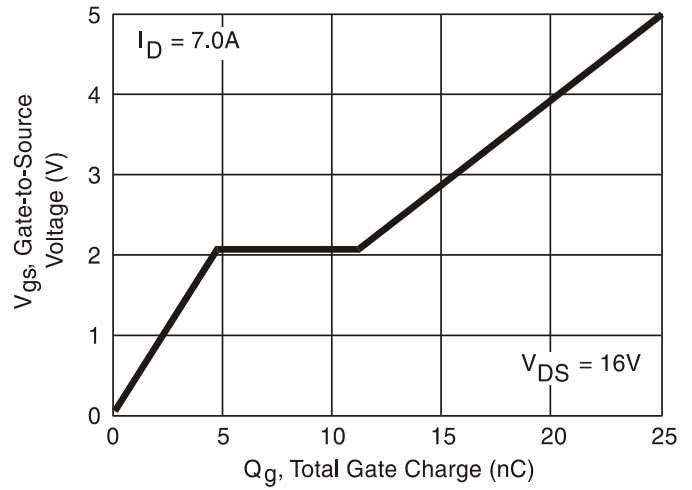
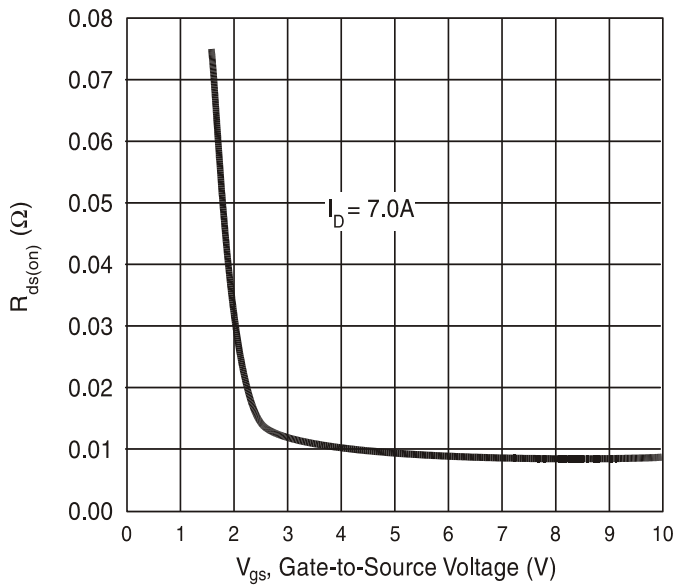
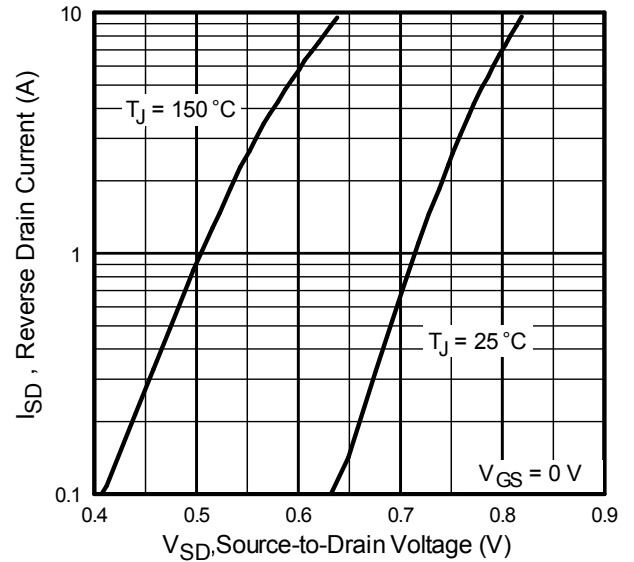
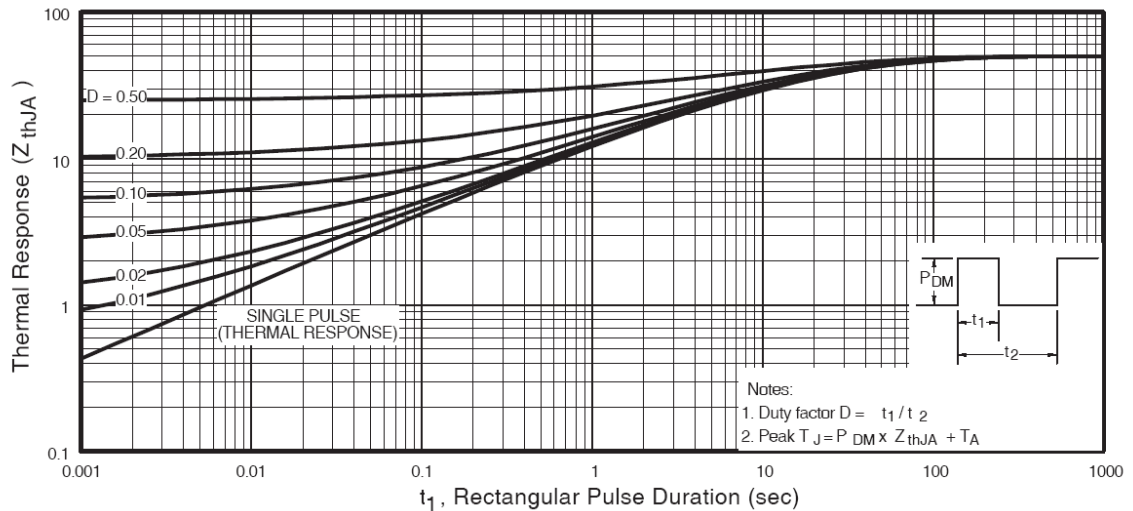
Q _g	Total Gate Charge	—	22	31	nC	I _D = 7.0A V _{DS} = 16V V _{GS} = 5.0V
Q _{gs1}	Pre -V _{th} Gate-to-Source Charge	—	3.7	—		
Q _{gs2}	Post-V _{th} Gate-to-Source Charge	—	1.4	—		
Q _{gd}	Gate-to-Drain Charge	—	6.8	—		
Q _{sw}	Switch Charge (Q _{gs2} + Q _{gd})	—	8.2	11.5		
Q _{oss}	Output Charge	—	3.0	3.6	nC	V _{DS} = 16V, V _{GS} = 0V
R _G	Gate Resistance	0.5	—	1.7	Ω	
t _{d(on)}	Turn-On Delay Time	—	16	—	ns	V _{DD} = 16V, V _{GS} = 4.5V ② I _D = 7.0A R _G = 2Ω Resistive Load
t _r	Rise Time	—	20	—		
t _{d(off)}	Turn-Off Delay Time	—	38	—		
t _f	Fall Time	—	16	—		

Diode Characteristics

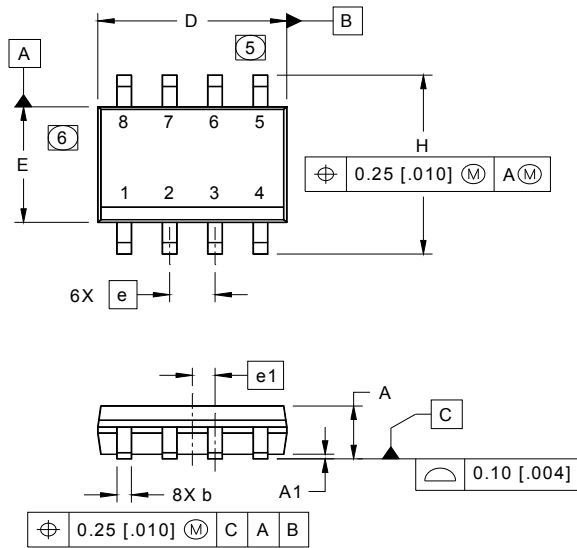
	Parameter	Min.	Typ.	Max.	Units	Conditions
I _S	Continuous Source Current (Body Diode)	—	—	2.5	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I _{SM}	Pulsed Source Current (Body Diode) ①	—	—	106		
V _{SD}	Diode Forward Voltage ⑥	—	—	1.2	V	T _J = 25°C, I _S = 7.0A, V _{GS} = 0V
Q _{rr}	Reverse Recovery Charge ④	—	88	—	nC	di/dt = 700A/μs V _{DS} = 16V, V _{GS} = 0V, I _S = 7.0A
Q _{rr}	Reverse Recovery Charge ④	—	55	—		di/dt = 700A/μs (with 10BQ040) V _{DS} = 16V, V _{GS} = 0V, I _S = 7.0A

Notes:

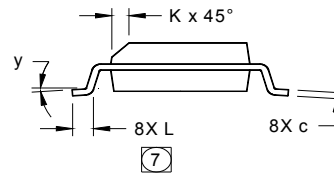
- ① Repetitive rating; pulse width limited by max. junction temperature.
- ② Pulse width ≤ 300μs; duty cycle ≤ 2%.
- ③ When mounted on 1" in square copper board, t < 10 sec.
- ④ Typ = measured - Q_{oss}
- ⑤ R_θ is measured at T_J of approximately 90°C.
- ⑥ Devices are 100% tested to these parameters.


Fig. 1 Normalized On-Resistance vs. Temperature

Fig. 2 Typical Gate Charge vs. Gate-to-Source Voltage

Fig. 3 Typical $R_{ds(on)}$ vs. Gate-to-Source Voltage

Fig. 4 Typical Source-Drain Diode Forward Voltage

Fig. 5. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

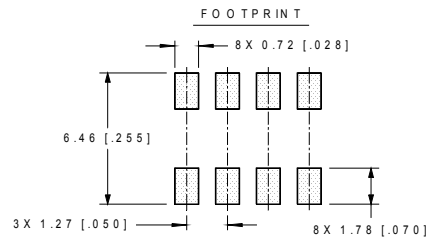
SO-8 Package Outline (Dimensions are shown in millimeters (inches))



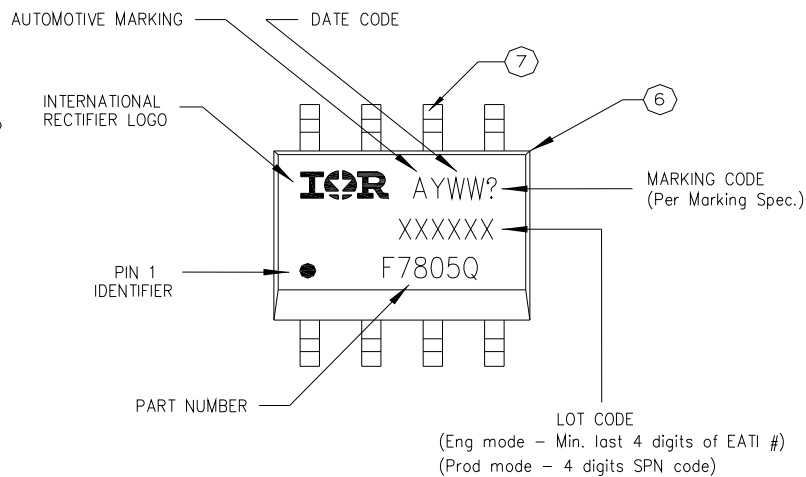
DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
b	.013	.020	0.33	0.51
c	.0075	.0098	0.19	0.25
D	.189	.1968	4.80	5.00
E	.1497	.1574	3.80	4.00
e	.050 BASIC		1.27 BASIC	
e 1	.025 BASIC		0.635 BASIC	
H	.2284	.2440	5.80	6.20
K	.0099	.0196	0.25	0.50
L	.016	.050	0.40	1.27
y	0°	8°	0°	8°


NOTES:

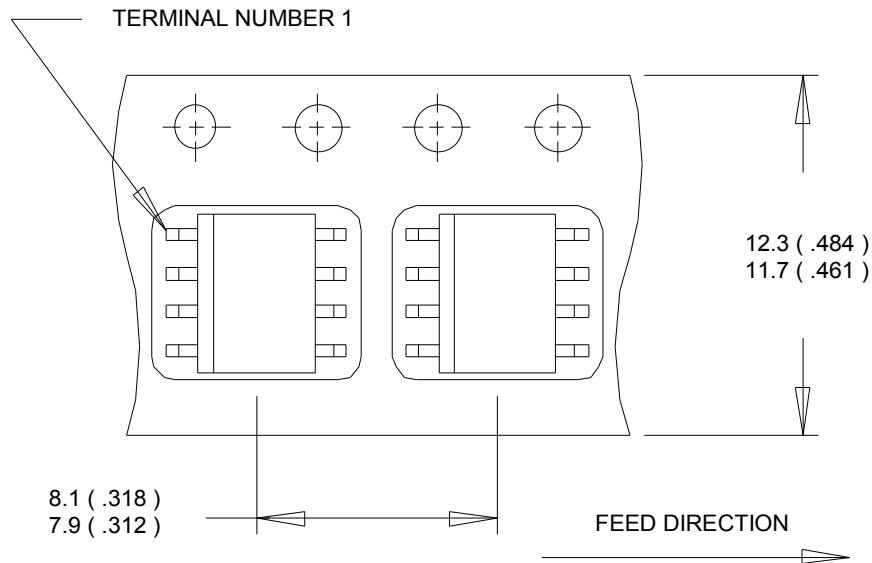
1. DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
2. CONTROLLING DIMENSION: MILLIMETER
3. DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
5. DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 [0.006].
6. DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.25 [0.010].
7. DIMENSION IS THE LENGTH OF LEAD FOR SOLDERING TO A SUBSTRATE.



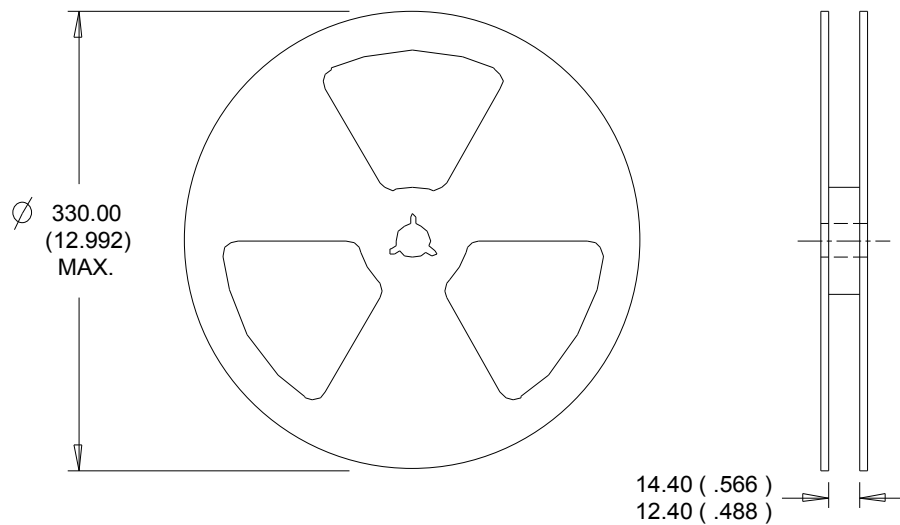
SO-8 Part Marking Information



Note: For the most current drawing please refer to IR website at <http://www.irf.com/package/>

SO-8 Tape and Reel (Dimensions are shown in millimeters (inches))

NOTES:

1. CONTROLLING DIMENSION : MILLIMETER.
2. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS(INCHES).
3. OUTLINE CONFORMS TO EIA-481 & EIA-541.


NOTES :

1. CONTROLLING DIMENSION : MILLIMETER.
2. OUTLINE CONFORMS TO EIA-481 & EIA-541.

Note: For the most current drawing please refer to IR website at <http://www.irf.com/package/>

Qualification Information

Qualification Level		Automotive (per AEC-Q101)	
		Comments: This part number(s) passed Automotive qualification. Infineon's Industrial and Consumer qualification level is granted by extension of the higher Automotive level.	
Moisture Sensitivity Level		SO-8	MSL1
ESD	Machine Model	Class M3 (+/- 300V) [†] AEC-Q101-002	
	Human Body Model	Class H1B (+/- 1000V) [†] AEC-Q101-001	
	Charged Device Model	Class C5 (+/- 2000V) [†] AEC-Q101-005	
RoHS Compliant		Yes	

† Highest passing voltage.

Revision History

Date	Comments
10/5/2015	<ul style="list-style-type: none"> Updated datasheet with corporate template Corrected ordering table on page 1.

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